

# Solidification-Fusion

## Introduction

What happens when it freezes? When ice melts? This practical work will help understand the physical changes in water, it will demonstrate solidification but also the opposite state, fusion.

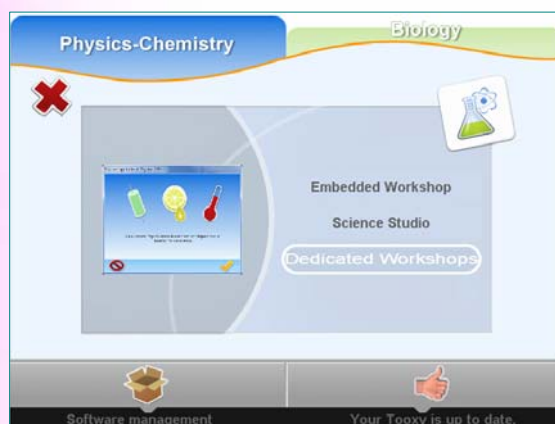
## Materials

Description	Quantity	Reference
Tooxy device	1	480 000
Thermometer sensor	1	482 204
Mini-freezer	1	701 078
Power supply	1	281 001
Electrical supply lead red 50 cm	1	283 073
Electrical supply lead black 50 cm	1	283 078
Demineralized water 1L	1	107 340

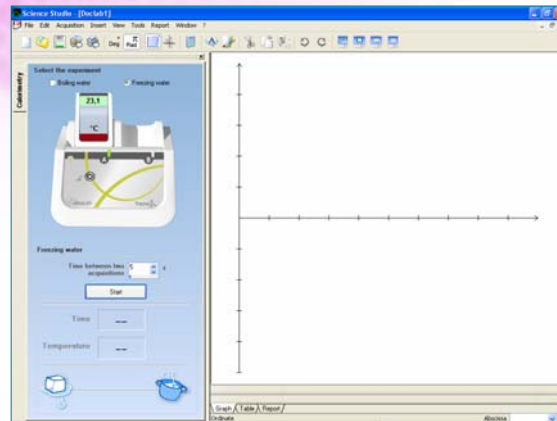
## Experimentation

### WATER SOLIDIFICATION - C.A.E. MODE

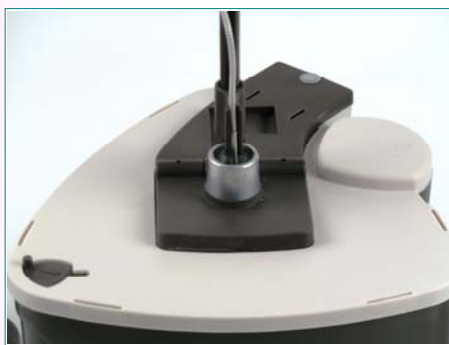
- Connect Tooxy to the computer
- ☞ Choose "*Dedicated Workshops*"
- ☞ Choose "*calorimetry module*", confirm



☞ Choose "Freezing water", the "Time between two acquisitions" is 5 sec

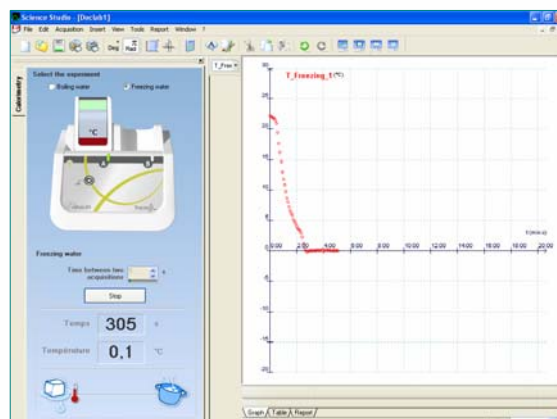


- Put room temperature distilled water in the mini-chamber of the mini-freezer (see instructions)
- Place the temperature probe into the mini-chamber ensuring that it doesn't touch the sides

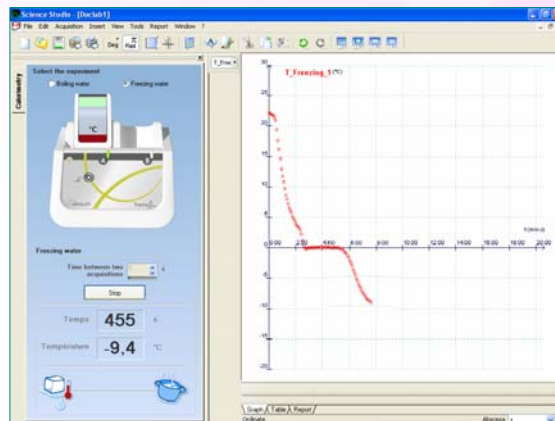


☞ Press "Start", the experiment begins

- Turn on the mini-freezer
- What do you see appear in the mini-chamber when temperature nears 0°C?



☞ When temperature no longer evolves, press "Stop" but keep on the mini-freezer



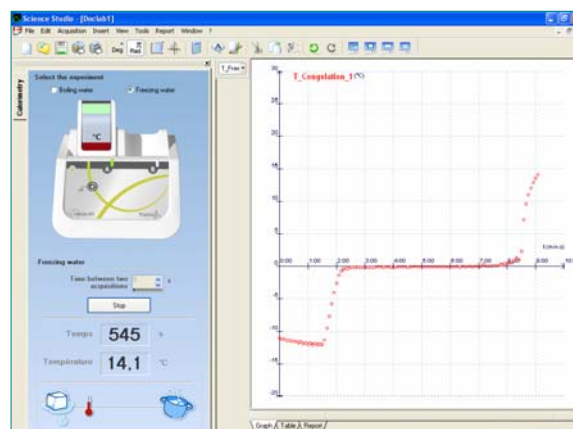
- Comment on the resulting curve
- What do you notice?
- What state was the water at the beginning of experience? What state is it now?
- What change has the water undergone?

## WATER FUSION - C.A.E. MODE

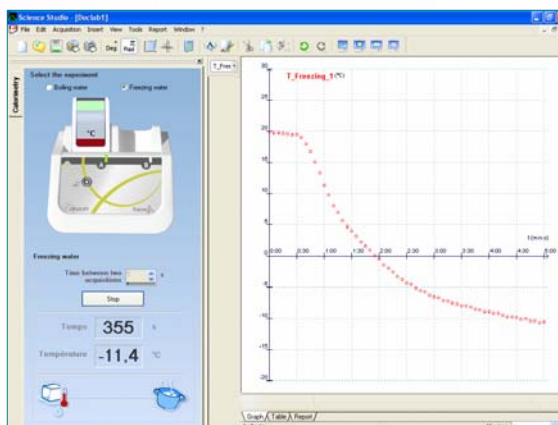
- Use the ice formed in the previous experiment, keep on the mini freezer



- Repeat the previous procedure
- ☞ Press "Start", the experiment begins
- Turn off the mini-freezer
- The "Time between two acquisitions" remains the same 5 sec
- ☞ When the temperature no longer evolves, press "Stop"



- Comment on the resulting curve
  - What do you notice?
  - What state was the water at the beginning of experience? What state is it now?
  - Compare the two curves obtained, what can be said about the results?
- Repeat the experiment this time using salt water



- What do you notice?
- Conclude the same way as with the unsalted water

## Conclusion

Complete:

Water passes from a liquid to solid state at a temperature of..... °C

This change in state corresponds to the ..... of the water, it occurs at a constant temperature

Water passes from a solid to liquid state at a temperature of..... °C

This change in state corresponds to the ..... of the water, it occurs at a constant temperature

Each change of state has three phases: solid, liquid and mixed

These state changes are reversible